

APPENDIX I

Water Shortage Response Plan

LEWIS COUNTY
DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

VADER – ENCHANTED VALLEY WATER SYSTEM
WATER SHORTAGE RESPONSE PLAN



MAY 2015

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INTRODUCTION

Water shortages can occur for a variety of reasons, including: natural disasters, extreme customer usage, equipment failures, leakage and inadequate source water. Our response will be dependent upon each type of and scope of the water shortage situation. For example, the scope may be system wide or localized.

Development

Water shortage situations arising out of a natural disaster and inadequate source water will involve the Lewis County Board of County Commissioners (BOCC) and other county offices. In the event of a large natural disaster, the BOCC will approve a declaration and designate the official FEMA disaster relief agent for the county, which is done annually. Lewis County has a countywide emergency management plan which outlines coordination efforts among county departments and offices. In the event of county emergencies, the efforts are headed by the Lewis County Sheriff Office , Division of Emergency Management (Emergency Management).

Despite the comprehensive county management and responses to a natural hazard, the water utility must continue or resume water service operations to provide safe and reliable drinking water. Development of the water shortage response plan is a process to help minimize or avoid water shortages during unusual events. This is the aim of the water shortage response plan.

The water shortage response plan is laid out in seven chapters following the guidance document by the State Department of Health (DOH), "Water Shortage Response Plans for Small Public Drinking Water Systems, October 2008, #331-316".

ABBREVIATIONS

BOCC	Board of County Commissioners
DOH	Washington State Department of Health
FEMA	Federal Emergency Management Agency
LCC	Lewis County Code
WSP	"Water System Plan for Vader-Enchanted Valley Water System" developed by Lewis County, 2015.

CHAPTER 1 – EVENTS THAT CAUSE WATER SHORTAGES

Emergency Categories

To aid in responding to events that can cause water shortages, a description of four categories of emergencies is provided. The categories are outlined in DOH publication #331-211, "Emergency Response Planning Guide for Public Water Systems, May 2003".

LEVEL 1 – NORMAL/ROUTINE EMERGENCY

These situations are defined as ones that: can be resolved within 24 hours, will not jeopardize public health, or can be handled normally by utility personnel. Examples are:

- Service and customer line breaks.
- Short power outages.
- Minor mechanical problems in Intake and Plant.

LEVEL 2 – MINOR/ALERT EMERGENCY

These situations are defined as ones that: can cause minor disruption in supply, pose possible contamination to the point of coordination with DOH or issuance of a health advisory to customers, or will take up to 72 hours to resolve. Examples are:

- Disruption in supply such as a transmission line break or pump failure with a potential for backflow and loss of pressure.
- Inadequate storage to handle disruption in supply.
- An initial positive coliform or E. coli sample.
- An initial primary chemical contaminant sample.
- A minor act of vandalism.
- Noticeable and continuing decline of water supply.

LEVEL 3 – SIGNIFICANT EMERGENCY

These situations are defined as ones that: have significant mechanical or contamination problems that will disrupt water delivery to customers to the point of issuing a health advisory, or may need more than 72 hours to resolve. Examples are:

- A verified acute confirmed coliform MCL or E. coli/fecal positive sample requiring an immediate health advisory to customers.
- A confirmed sample of another primary contaminant requiring an immediate health advisory to customers.
- A loss or complete malfunction of the water treatment facilities for the surface water source, including chlorination.
- A major main break or system failure resulting in a water shortage or system shutdown.
- Vandalism or threat such as intrusion or damage to a system facility.
- An immediate threat to the public health of the customers and an advisory is required.

LEVEL 4 – CATASTROPHIC DISASTER/MAJOR EMERGENCY

These situations are defined as ones that: experience damage from major damage or contamination from a natural disaster, an accident or malicious act of intent; require immediate notification of law enforcement and local emergency management services; immediate issuance of health advisories and emergency declarations to protect public health; or take several days to weeks to resolve.

Examples are:

- Hazards identified in Chapter 8, WSP.
- Contamination of water supply or system with biological or chemical agents.
- Spills or contaminant entry within 2,000 ft of the water source.

Water Shortage Events

The next step in this chapter was to identify the types of events that can cause water shortages by either at the source, treatment and distribution system. These are presented in Table 1 according to their respective category of emergency. Emergencies that fall under Levels 1 and 2 are not included as these are determined to be resolved within 24 hours and up to 72 hours, respectively. The probability of occurrence or risk for each event is given as high, medium or low (H, M, L). The probability of occurrence is based on past occurrences or likelihood as identified in "Lewis County Multi-Jurisdictional Hazard Mitigation Plan" adopted on July 26, 2010. Each event is also rated as either an immediate (I) or anticipated (A) impact to water shortage. The "potential effects on facility types" are provided in Table 1 (columns 4 to 9) to help determine the risk and impact type. Refer to the WSP for a description and response action for each hazard.

TABLE 1 – WATER SHORTAGE CAUSING EVENTS								
			POTENTIAL EFFECTS ON FACILITY TYPES:					
EMERGENCY LEVEL	RISK	IMPACT TYPE	SUPPLY SOURCE	INTAKE	PLANT	STORAGE	DISTRIB. SYSTEM	POWER SUPPLY
LEVEL 3								
Water Main Break	H	I					X	
Vandalism	L	I		X	X	X	X	X
LEVEL 4								
Dam Failure	M	I	X	X				
Debris Flow	M	A	X	X				
Drought	M	A	X					
Earthquake	H,M	I	X	X	X	X	X	X
Extreme Heat	M	A				X		X
Flooding	H	A	X	X	X			
Hailstorm	L	A						X
Ice/Snow Storm	L	I		X	X	X	X	X
Severe Windstorm	M	A		X	X			X
Volcanic Eruption	L	I	X	X	X			X
Wildfire	H,M	I	X	X	X			X

CHAPTER 2 – EVALUATE SUPPLY AND DEMAND

Supply Source

The supply source is the Cowlitz River. The information is presented in Table 2.

TABLE 2 – WATER RIGHTS SUMMARY				
Source	Certificate	Instantaneous Withdrawal		
		Water Right (gpm)	Existing Capacity (gpm)	Surplus (+) or Deficit (-) (gpm)
Cowlitz River	9616	224	200 (=288,000 gpd)	24

Consumption Demand

Consumption is presented in Table 3 which was developed for the WSP.

TABLE 3 – WATER DEMAND FORECAST												
WATER USE CATEGORY	BASE (2014)				6-YEAR (2020)				20-YEAR (2034)			
	#ERU	DEMAND (gpd)			#ERU	DEMAND (gpd)			#ERU	DEMAND (gpd)		
		ADD	MDD	PHD		ADD	MDD	PHD		ADD	MDD	PHD
Residential	344	39,908	55,871	-	370	42,869	60,018	-	437	50,660	70,924	-
Commercial	18	2,088	2,923	-	19	2,249	3,149	-	24	2,771	3,879	-
Industrial	0	0	0	-	0	0	0	-	0	0	0	-
Other	15	1,740	2,436	-	15	1,741	2,436	-	15	1,744	2,442	-
Subtotal	377	43,736	61,230	-	404	46,859	65,603	-	476	55,175	77,245	-
Non-Revenue Water	90	10,497	14,696	-	97	11,246	15,745	-	114	13,242	18,539	-
TOTAL DEMAND WITHOUT CONSERVATION	468	54,232	75,925	127 gpm	501	58,106	81,348	134 gpm	590	68,417	95,784	150 gpm
Conservation	N/A	N/A	N/A	N/A	-32	-3,706	-4,817	-	-40	-4,564	-5,933	-
TOTAL DEMAND WITH CONSERVATION	446	51,758	72,461	123 gpm	478	55,448	77,627	129 gpm	563	65,276	91,387	145 gpm

ERU = 116 gpd/residential customer

Comparison

A comparison of the supply and consumption information is presented in Table 4.

TABLE 4 – SUPPLY AND DEMAND COMPARISON	
QUESTIONS	YES/NO
Can the source and pumping capability meet average day demand?	Yes
Can the source and pumping capability meet peak day demands?	Yes
Is there more than normal or significant drawdown in the storage reservoir during times of average and/or peak day demand?	No
Does consumption ever exceed the supply resulting in water shortage problems?	No
Think about if the supply were reduced by 10%, 20% and 30%. Where is the point at which demand could not be met?	80% of 2014, 76% of 2034
Is it likely the water system will experience a water shortage? If yes, do you consider the magnitude of the shortage severe, moderate or minor?	No

CHAPTER 3 – DEFININGS STAGES AND CRITERIA OF A WATER SHORTAGE

Stages and criteria are in Section 13.30.700 Lewis County Code (LCC).

13.30.700 Water conservation program. The utility division may develop and administer any programs necessary to further water conservation or to comply with water conservation requirements of any local, state or federal agency having jurisdiction within the utility service area. [Ord. 1215 §3 (Att. A), 2010]

A Level I water supply problem may be declared at the discretion of the administrator. Voluntary water conservation measures may be requested by notice and education of the customers about “nonessential uses” as defined in this section and in the water shortage response plan for the respective utility.

A Level II water supply problem may be declared by the administrator when water usage exceeds the rate of resupply. Voluntary water conservation measures will be used including reduced or altered outdoor watering schedules.

A Level III water supply problem will be declared by the Board when water supply fails to meet the demand for water and voluntary conservation measures are ineffective or expected to be inadequate. No outdoor watering except as authorized by the administrator, no potable water shall waste in any drainage way, and no nonessential uses are allowed.

The following water uses are considered nonessential water uses during Level III emergencies: washing of any motorbike, motor vehicle, boat, trailer, airplane or other vehicle except at a commercial self-contained washing facility; hosing of any sidewalks, walkways, driveways, parking lots, tennis courts or other hard surfaced areas, buildings or structures; filling and refilling of any indoor or outdoor swimming and jacuzzi pools except where authorized for neighborhood fire control or as required by a medical doctor’s prescription; using water in a fountain or pool for aesthetic purposes except where needed to support fish life; serving water to a customer in a restaurant unless requested by the customer; drawing water from hydrants for construction, fire drills, recreation and non-firefighting purposes; using water for dust control; and irrigating water for recreational fields, golf courses and grounds.

If the administrator determines that any customer failed to comply with the provisions pertaining to a Level III water emergency, then one written warning notice shall be delivered to the customer’s residence or posted at the front entrance of the residence. If the customer fails to respond within the stated conditions, the administrator will authorize disconnection of the customer’s water service. Service so disconnected shall be restored only upon payment to unlock or turn the meter on, service meter charge and other costs incurred in the discontinuance of service, and assurance that the action causing the discontinuance will not be repeated. Prior to restoration of service, the utility may install a flow restrictive device on the customer’s service line. The flow restrictive device will be removed at the expiration of the Level III water emergency and may be removed earlier at the discretion of the administrator.

CHAPTER 4 – ALTERNATE WATER SOURCES

The water system does not have an intertie to an adjacent water supply system or a backup well. It will have to depend on the alternate sources presented in Table 5.

TABLE 5 – ALTERNATE SOURCES OF WATER				
ALTERNATIVE SOURCES	NAMES	CONTACT INFORMATION	AVAILABILITY	SAFE FOR DRINKING?
Bottled water	Home Depot Store #4740 Chehalis, WA	360-748-2102	5-gal, 24 pk of 17 oz bottles.	Yes
"	WalMart	360-748-1240	On stock	Yes
"	Costco	360-357-6580	On stock	Yes
Tanker truck, LCPW	Lewis County Public Works	Public Works Director, 360-740-2697	Depends on source.	No
Tanker truck	Water Buffalo, Inc.	877-278-2669	4000 gal tanker. Depends on source.	Yes
"	City of Chehalis	David Vasilauskas, Water Superintendent, 360-740-748-0238	Per availability or agreement.	Yes
"	City of Centralia	Kahle Jennings, Public Works Director, 360-330-7512	"	Yes
"	City of Napavine	Steve Ashley, Director of Public Works 360-262-9231	"	Yes
"	City of Winlock	360-785-3811	"	Yes
"	City of Toledo	360-864-4564	"	Yes
"	City of Mossyrock	360-983-3300	"	Yes
"	Cowlitz County Public Works, Utilities Division	Brent Sanborn, Utilities Manager 360-577-3030 x6538	"	Yes

CHAPTER 5 – EFFECTIVE COMMUNICATION

The Utility uses the following modes to inform our water service customers: 1) Lewis County CodeRED notification system; 2) newsletters & correspondence; 3) doorhangers; 4) message box in water invoices; 5) Lewis County website; 6) Vader Lion's Club billboard; and 7) notices at public places. The CodeRED system is used to send critical communications to registered customers. The Utility uses CodeRED for repairs, disasters and events that will last longer than 24 hours. Messages are reviewed internally before it is sent to the county 911 system for clarity. The procedure is in our Standard Operating Procedures (SOP) manual.

In the event of an impending water shortage, messages can be conveyed in advance using the above listed modes of communication. Messages will be developed, updated and approved by the utility workgroup or Administrator as an event develops. Some example key water shortage messages are provided below.

- There is a potential for a water shortage this year due to drought conditions. We are taking this seriously and will be communicating with you regularly.
- Our primary concern is protecting our customers' health and the quality of the water being supplied by keeping the water system operational.
- What we know right now is ...
- We ask customers to conserve water by implementing water conservation measures. These measures are provided at...
- The potential exists for a less-than-normal water supply. Customers are advised that water use restrictions may become necessary to minimize or avoid water supply problems.
- Please be advised that everyone is required to conserve water in the following ways:...

CHAPTER 6 – DEMAND REDUCTION ALTERNATIVES

Stages and criteria are in Section 13.30.700 LCC. This section of the LCC is in Chapter 3 of this document.

CHAPTER 7 – WATER SHORTAGE RESPONSE ACTIONS

Table 6 summarizes some of the response actions for specific water shortage events that the Utility can take. The criteria for the response action is according to Section 13.30.700 LCC. It is recognized that these suggested actions will be modified by the utility Administrator and the utility workgroup to best address the situation.

TABLE 6 – WATER SHORTAGE RESPONSE ACTIONS			
STAGE	CRITERIA	ACTIONS	GENERAL MESSAGE TYPE
I	Low Cowlitz River water levels & forecasts by Tacoma Power	Alerts for voluntary conservation measures	Updates according to Tacoma Power and other forecasters
	Discretion of Administrator	Voluntary conservation measures	We may soon experience less than normal water supplies.
	"	"	Please use water wisely.
II	Low Cowlitz River water levels & forecasts by Tacoma Power	Alerts for voluntary conservation measures	Updates according to Tacoma Power and other forecasters
	Usage exceeds rate of resupply	Voluntary conservation measures	Please use water wisely.
	"	Outdoor watering schedules	Outdoor watering schedules.
III	Water supply is inadequate to meet demand	No outdoor watering except as authorized by Administrator	No outdoor watering, wasting of potable water and nonessential uses.
	Voluntary conservation efforts are ineffective or expected to be inadequate	No wasting of potable water in any drainage way	"
	"	No nonessential uses of potable water	"